

## Are Critically Ill Older Patients Treated Differently Than Similarly Ill Younger Patients?

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**Our goal was to determine whether critically ill older patients are treated differently than middle-aged patients. If so, what factors besides age contribute to that difference? Internal medicine residents (n = 46) and practicing internists (n = 41) received 8 clinical vignettes of 4 critically ill 85-year-old patients and 4 critically ill 50-year-old patients. Each patient had a distinct premorbid mental and physical state. Each respondent selected from 4 levels of therapeutic aggressiveness for each patient. The main outcome measure was the proportion of physicians who intended to treat the older of each matched pair of patients less aggressively than the younger one (that is, downgraded for age). Eight physicians (9%) treated a previously unimpaired 85-year-old patient less aggressively than a comparable 50-year-old patient. When the matched patients were either premorbidly mentally or physically impaired (but not both), about 20% of physicians downgraded for age. Most downgraded for age in matched patients who were premorbidly both mentally and physically impaired. We conclude that age alone does not engender much therapeutic bias against older patients as long as they are physically and mentally intact before the onset of their acute illness. As premorbid disabilities multiply, older patients may be treated less aggressively than younger ones with similar impairments and clinical presentations.**

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Past investigations into the attitude of medical students and physicians toward older patients have found that older patients are viewed negatively compared with younger subjects. This attitude spans respondents of both sexes and varying ages, ethnicity, and socioeconomic backgrounds. These findings have been replicated with different measuring instruments, including the Facts on Aging quiz,<sup>1</sup> Aging Semantic Differential Questionnaire,<sup>2</sup> Maxwell and Sullivan's questionnaire,<sup>3</sup> and John and Steel's vignettes.<sup>4</sup> Attitude, however, has always been difficult to measure because it can be masked by a "politically correct" answer and because older patients in these studies have usually been presented to the respondents in a generic and stereotypic manner. The objective is to measure physicians' actual behavior toward older patients. Observation and medical records review perhaps best investigate behavior, but both are expensive ventures in today's medical economic climate. Instead, we chose to examine physicians' responses to specially designed clinical vignettes.

Our study has attempted to isolate factors in addition to age that influence physicians' therapeutic behavior

toward older patients. We questioned physicians about their intended therapeutic decisions for critically ill older patients with distinct premorbid mental and physical states and compared these with their intended therapeutic decisions for critically ill middle-aged persons with similar premorbid mental and physical states.

### Patients and Methods

We controlled for patients' acute illness severity, age, and premorbid mental and physical capacity. A set of eight vignettes was constructed in which three variables (age, premorbid mental capacity, and premorbid physical capacity) were presented (Figure 1). The vignettes compared a 50-year-old and an 85-year-old man with similarly severe medical illnesses whose prognostic similarity had been verified by a panel of chief medical residents and other experienced clinicians. The order of presentation of the vignettes was scrambled to divert the respondents' attention from the real purpose of the questionnaire—to record their intended behavior toward ill older patients. Each

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**ABBREVIATIONS USED IN TEXT**

CI = confidence interval

DNR = do-not-resuscitate

respondent was asked to choose one of four levels of therapeutic aggressiveness for patients described in each of the eight vignettes (Figure 1). Another section of the questionnaire obtained basic demographic data (age, sex, location of medical school, and year of graduation).

The questionnaires were given to two groups of respondents: internal medicine residents (PGY1-4) attending an American College of Physicians Associates conference in Pennsylvania ( $n = 46$ ) and older seasoned clinicians attending another state American College of Physicians meeting ( $n = 41$ ). These respondents were assured of the anonymity of their responses. The questionnaires presented to each group were identical except for the requested demographic data and vignette 3. After the test had been administered to the resident group, a few senior geriatricians felt that vignettes 3 and 6 were not truly comparable because the patient with Down syndrome was not as severely impaired mentally and physically as the geriatric patient with late-stage Alzheimer's disease. A new version of vignette No. 3 was included in the questionnaires given to the more senior clinicians (end of Figure 1).

Ninety-five percent confidence intervals (95% CI) of proportions were presented. Fisher's exact test compared proportions in different groups. A response was defined as downgraded for age when the respondents specified less intensive treatment for the 85-year-old patient than for the 50-year-old patient in a matched pair of vignettes. McNemar's test was used to compare the paired percentages of downgrading for age in patients with different combinations of premorbid mental and physical impairment. All  $P$  values are two-tailed. Analyses were performed using a commercially available statistical software (Statistical Package for the Social Sciences [SPSS] for Windows 7.5, SPSS Inc, Chicago, Ill).

## Results

The study group consisted of 37 male and 9 female residents and 36 male and 5 female seasoned practitioners. Of the total group, 43 were US medical graduates and 44 were international medical graduates (from North or South America, Europe, Asia, or Africa). Ages ranged from 26 to 80 years, with a median of 38 years. The years since obtaining a medical degree ranged from 1 to 53, with a median of 10 years.

The frequency of downgrading the level of treatment in 85-year-old patients compared with 50-year-old patients was similar in residents and practicing internists ( $P > .27$ ; data not shown). By combining the results for residents and experienced practitioners, we see that only 8 (9%) (95% CI, 4%–17%) physicians intended to treat the previously healthy older patient less aggressively

than the previously healthy middle-aged patient (Table 1). When both patients had impaired mental but intact physical status prior to the acute illness, however, 16 (18%) (95% CI, 11%–28%) downgraded treatment of the 85-year-old patient compared with the 50-year-old patient. When both patients had intact mental but impaired physical states premorbidly, 18 (21%) (95% CI, 13%–31%), downgraded for age ( $P = .77$ ). There was less age downgrading in patient pairs with no premorbid impairment than with one physical impairment ( $P = .006$ ) or with one mental impairment ( $P = .04$ ). When both patients had impaired premorbid mental and physical states, 53 physicians (61%) downgraded for age.

Although the premorbid states of the globally impaired 50-year-old patient presented to the residents and practitioners differed slightly (see both versions of vignette 3 in Figure 1), most of both groups (32 of the 46 residents and 21 of the 41 practitioners) would still have treated the 85-year-old patient less aggressively. Physicians downgraded the treatment level of the 85-year-old patient compared with the 50-year-old patient with both premorbid mental and physical impairments. This was much less pronounced in the matched pairs of patients with only one such impairment. This finding held for both residents and seasoned practitioners ( $P < .004$  for all 4 comparisons, Table 1).

We investigated the associations between the responses to the vignettes and demographic characteristics of the respondents. The five demographic variables were resident or practitioner, age, sex, number of years since receiving medical degree, and US or international medical graduate. Downgrading treatment aggressiveness in the older patient of each premorbidly similar pair showed no correlation with any demographic variable ( $P > .19$  for each variable).

## Discussion

Our results indicate that age alone did not engender much therapeutic bias against critically ill older patients as long as they were physically and mentally intact before the onset of their acute illness. As disabilities multiplied, physicians chose less aggressive treatment options for critically ill 50-year-old patients, but that tendency was far more pronounced for 85-year-old patients. As premorbid disabilities multiply, older patients may be treated less aggressively than younger age groups with similar impairments and clinical presentations.

We also found no statistical differences in age downgrading over the five measured demographic characteristics. Thus, our study conclusions are applicable over a wide range of residents and seasoned practitioners of varying age, sex, length of medical experience, and country in which the medical degree was earned.

The anonymous clinical vignette questionnaire is a useful method to investigate the influence of patient's age on physicians' therapeutic decisions and to separate patient's age from other factors. Other recent studies have used a standard of "do-not-resuscitate" (DNR)

For each of the following vignettes, please check which of the following most closely agrees with your plan of treatment:

- a) Admit to ICU and use all available therapeutic and technological support without restriction.
- b) Admit to floor and treat with appropriate IV medications and nasal O<sub>2</sub>. The patient is a "Full Code."
- c) Admit to floor and treat with appropriate IV medications and nasal O<sub>2</sub>. The patient is a No Code.
- d) Make patient comfortable. Do not otherwise intervene therapeutically.

#### Case 1

A 50-year-old man is admitted to the hospital with a history of sudden onset of crushing substernal chest pain and shortness of breath. Physical examination reveals a blood pressure of 70/50 mm of mercury and bilateral massive pulmonary edema. The patient is an avid tennis player and is a senior partner in a law firm.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 2

An 85-year-old man is admitted to the hospital with a history of insulin-dependent diabetes mellitus and recent onset of fever, chills, cough, and dyspnea. His chest x-ray film reveals massive bilateral pneumonia. His blood sugar is 900 with positive serum acetone. Arterial blood gas values: pH 7.10, pO<sub>2</sub> 45, pCO<sub>2</sub> 80. Serum electrolytes: sodium 125, potassium 6.5, chloride 90, CO<sub>2</sub> 10. Until today, the patient was able to accomplish all basic activities of daily living (walking, eating, bathing, toileting, and dressing) without assistance but has become progressively forgetful over the past 3 years.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 3

A 50-year-old man is admitted to the hospital with a history of sudden onset of crushing substernal chest pain and shortness of breath. Physical examination reveals a blood pressure of 70/50 mm of mercury and bilateral massive pulmonary edema. The patient has Down syndrome. He suffered burns of both hands on a stove at age 20. Despite multiple attempts at plastic surgical repair, his hands remain nonfunctional. He lives in a shelter.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 4

An 85-year-old man is admitted to the hospital with a history of insulin-dependent diabetes mellitus and recent onset of fever, chills, cough, and dyspnea. His chest x-ray reveals massive bilateral pneumonia. His blood sugar is 900 with positive serum acetone. Arterial blood gas values: pH 7.10, pO<sub>2</sub> 45, pCO<sub>2</sub> 80. Serum electrolytes: sodium 125, potassium 6.5, chloride 90, CO<sub>2</sub> 10. The patient walks 2 miles per day and runs a real estate business.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 5

A 50-year-old man is admitted to the hospital with a history of sudden onset of crushing substernal chest pain and shortness of breath. Physical examination reveals a blood pressure of 70/50 mm of mercury and bilateral massive pulmonary edema. The patient was wounded in Vietnam and required bilateral above-the-knee amputations. He is married and works as an actuary.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 6

An 85-year-old man is admitted to the hospital with a history of insulin-dependent diabetes mellitus and recent onset of fever, chills, cough, and dyspnea. His chest x-ray reveals massive bilateral pneumonia. His blood sugar is 900 with positive serum acetone. Arterial blood gas values: pH 7.10, pO<sub>2</sub> 45, pCO<sub>2</sub> 80. Serum electrolytes: sodium 125, potassium 6.5, chloride 90, CO<sub>2</sub> 10. He developed Alzheimer's-type dementia 10 years ago and now resides in a nursing home where he has stage III pressure ulcers and contractures of all his extremities.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 7

A 50-year-old man is admitted to the hospital with a history of the sudden onset of crushing substernal chest pain and shortness of breath. Physical examination reveals a blood pressure of 70/50 mm of mercury and bilateral massive pulmonary edema. He lives with his wife and tends a large garden. He has taken neuroleptic agents for psychotic agitation and auditory hallucinations for years. Drug side effects have required a decrease in dosage with correspondingly increasingly severe psychotic behavior.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Case 8

An 85-year-old man is admitted to the hospital with a history of insulin-dependent diabetes mellitus and recent onset of fever, chills, cough, and dyspnea. His chest x-ray reveals massive bilateral pneumonia. His blood sugar is 900 with positive serum acetone. Arterial blood gas values: pH 7.10, pO<sub>2</sub> 45, pCO<sub>2</sub> 80. Serum electrolytes: sodium 125, potassium 6.5, chloride 90, CO<sub>2</sub> 10. He suffered a right CVA with left hemiparesis 5 years ago and ambulates with a walker. He and his wife lead an active social life at their senior citizens' condominium.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

#### Vignette 3 Presented to the Practitioner Group

##### Case 3

A 50-year-old man is admitted to the hospital with a history of sudden onset of crushing substernal chest pain and shortness of breath. Physical examination reveals a blood pressure of 70/50 mm of mercury and bilateral massive pulmonary edema. The patient has Down syndrome; he is severely mentally incompetent and has been uncommunicative since birth. He suffered burns of both hands on a stove at age 20. Despite multiple attempts at plastic surgical repair, his hands remain nonfunctional. He has been institutionalized since birth.

\_\_\_a            \_\_\_b            \_\_\_c            \_\_\_d

**Figure 1.**—These vignettes were presented to house officer and practitioner groups (with the exception of vignette 3, which was changed for the practitioner group [see end of figure]). CVA = cerebrovascular accident, ICU = intensive care unit, IV = intravenous, O<sub>2</sub> = oxygen

orders to determine physicians' possible therapeutic bias against older patients. Wenger and co-workers found that older patients were more likely to receive DNR status even after adjustment for their prognosis and functional (cognitive, ambulatory, and continence) states and that

this increased directly with advancing age past 65 years.<sup>5</sup> Hakim and associates found that "DNR orders were written most rapidly for persons older than a threshold of 75 years of age."<sup>6</sup> P 291 However, DNR orders reflect many factors pertaining to the patient, the patient's family, and

TABLE 1.—Fraction of Respondents (n = 87) Who Downgraded Treatment of the Older Patient Compared With the Middle-aged Patient\*

	Mentally Intact	Mentally Impaired
Physically intact	8/87	16/87
Physically impaired	18/87	53/87†

\*See "Results" section for paired comparisons of age downgrading in above 4 categories.

†Thirty-two of 46 residents and 21 of 41 practitioners.

the physician, including the physician's previous life experiences, medical training, and the specific socioeconomic environment in which the physician works.<sup>6,7</sup> It is difficult, if not impossible, to separate these factors and analyze their effect on DNR orders. Such studies have been conducted by either or both medical records review and patient, family, and physician interview. Either of these methods breaches physician anonymity, a problem not encountered with our anonymous and confidential questionnaire. Also, medical records review or personal interview studies are complicated by physicians' need to deal with many different diseases, each of whose presentation or course in their patients may be highly variable. On the other hand, the vignette represents a more focused assessment of physicians' treatment predispositions because responses are triggered by specific information related only to three variables of interest (age, premorbid mental state, and premorbid physical state). The specific information presented to respondents individualizes each patient. All respondents reviewed the same vignettes; only two diseases (which had been screened by a physi-

cian panel for prognostic similarity) with identical clinical presentations were used. The clinical vignette, when used appropriately, can help clarify thought processes leading to medical decisions.

These results stimulate further questions. What factors other than premorbid mental and physical states (such as degree of patient's or family's interest, patient's financial status, or degree of patient's dependency in living arrangements) might influence physicians' behavior toward a critically ill older patient? How are these results influenced by a physician's method of remuneration? Ethically, why should a premorbidly globally impaired and severely ill young person be regarded or treated differently than a similar older patient? How would older persons themselves respond to these same vignettes when they have been "translated" into lay language? The last question is under investigation by our group.

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